

PTO/SB/08A (08-03)

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known

10/534217

Sheet	1	of	1
Application Number	Not Yet Accorded		
Filing Date	Not Yet Accorded		
First Named Inventor	Kannan Ramanathan		
Art Unit	Not Yet Accorded		
Examiner Name	Not Yet Accorded		
Attorney Docket Number	NREL IR 02-29		

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	1	US- 6,355,874 B1	03/12/2002	Yagi et al.	
	2	US- 6,040,521	03/21/2000	Kushiya et al.	
	3	US- 4,751,149	06/14/1988	Vijayakumar et al.	
	4	US- 5,990,416	11/23/1999	Windisch, Jr. et al.	
	5	US- US2002/0043279 A1	04/18/2002	Karg et al.	
	6	US- 5,474,939	12/12/1995	Pollock et al.	
	7	US- 6,458,673 B1	10/01/2002	Cheung	
	8	US- 4,335,266	06/01/1982	Mickelsen et al.	
	9	US- 4,612,411	09/16/1986	Weiting et al.	
	10	US- 6,346,184 B1	02/12/2002	Sano et al.	
	11	US-			
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	13	US-			
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FOREIGN PATENT DOCUMENTS								
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		Country Code ³	Number Kind Code ⁴	(if known)				

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10/534217

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				Examiner Name	Not Yet Accorded
Sheet	2	of	2	Attorney Docket Number	NREL IR 02-29

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No.†	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T²
	1	Tomar, M.S. and Garcia, F.J., "A ZnO/p-CuInSe ₂ Thin Film Solar Cell Prepared Entirely by Spray Pyrolysis," Thin Solid Films, 90 (1982), pgs. 419-423.	
	2	"Chemical Vapor Deposited Copper Indium Diselenide Thin Film Materials Research" Final Report, March 1984, SERI/STR-211-2247.	
	3	Terheggen et al., "Ga ₂ O ₃ segregation in Cu(In, Ga)Se ₂ /ZnO superstrate solar cells and its impact on their photovoltaic properties.	
	4	Ramanathan et al., "Surface Treatment of CuInGaSe ₂ Thin Films and Its Effect on the Photovoltaic Properties of Solar Cells" In: National Renewable Energy Laboratory conference paper preprint. NREL: Colorado, October 2002, pgs. 1-6, especially page 1.	
	5	Nishiwaki et al. "Preparation of Zn Doped Cu(InGa)Se ₂ Thin Films by Physical Vapor Deposition for Solar Cells. Solar Energy Materials & Solar Cells. 01 June 2003, Vol. 77, No. 4, pgs 359-368, especially pgs. 360-361.	
	6	Yamada et al. "Buried pn Homojunction in Cu(InGa)Se ₂ solar cells formed by intentional Zn doping. In: Conference Record of the 28th Photovoltaic Specialists Conference. IEEE, 15-22 September 2000, pgs 462-465, especially pg. 462.	
	7	Delahoy et al. "Charging and Discharging of Defect States in CIGS/ZnO Junctions. Thin Solid Films. 2000, Vol. 361-362, pgs. 140-144, especially pg. 361.	

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